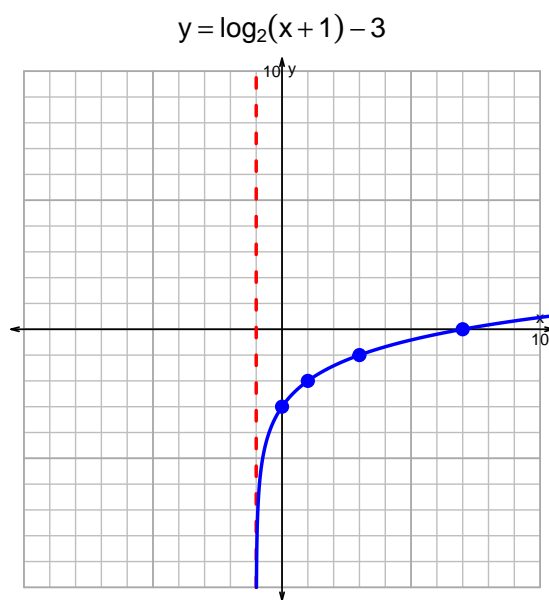
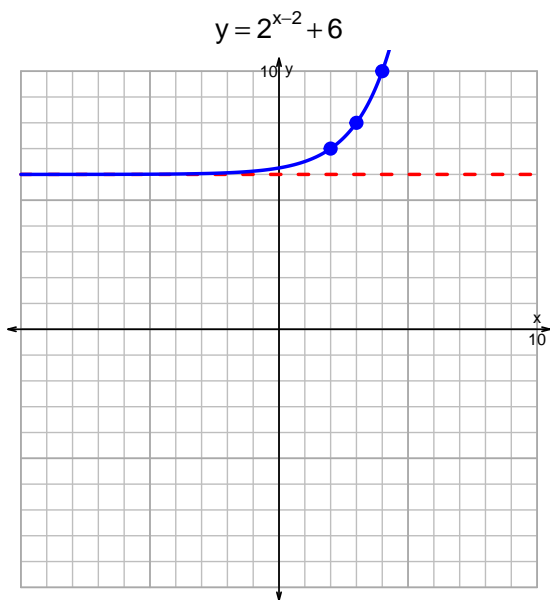


Name: _____

Date: _____

s18: EXP LOG (SLTN v353)

1. (10 pts) Graph $y = 2^{x-2} + 6$ and $y = \log_2(x+1) - 3$ on the grids below. Also, draw any asymptotes with dashed lines.



Somewhat useful hint: $2^3 = 8$, and thus $\log_2(8) = 3$.

2. (10 pts) Write (but do not evaluate) the solution to the equation below by writing a logarithmic expression. Please do not do any arithmetic; just move numbers around.

$$-17 = \left(\frac{-5}{4}\right) \cdot 10^{3t/7}$$

Divide both sides by $\frac{-5}{4}$.

$$\frac{17 \cdot 4}{5} = 10^{3t/7}$$

Take log, base 10, of both sides.

$$\log_{10} \left(\frac{17 \cdot 4}{5} \right) = \frac{3t}{7}$$

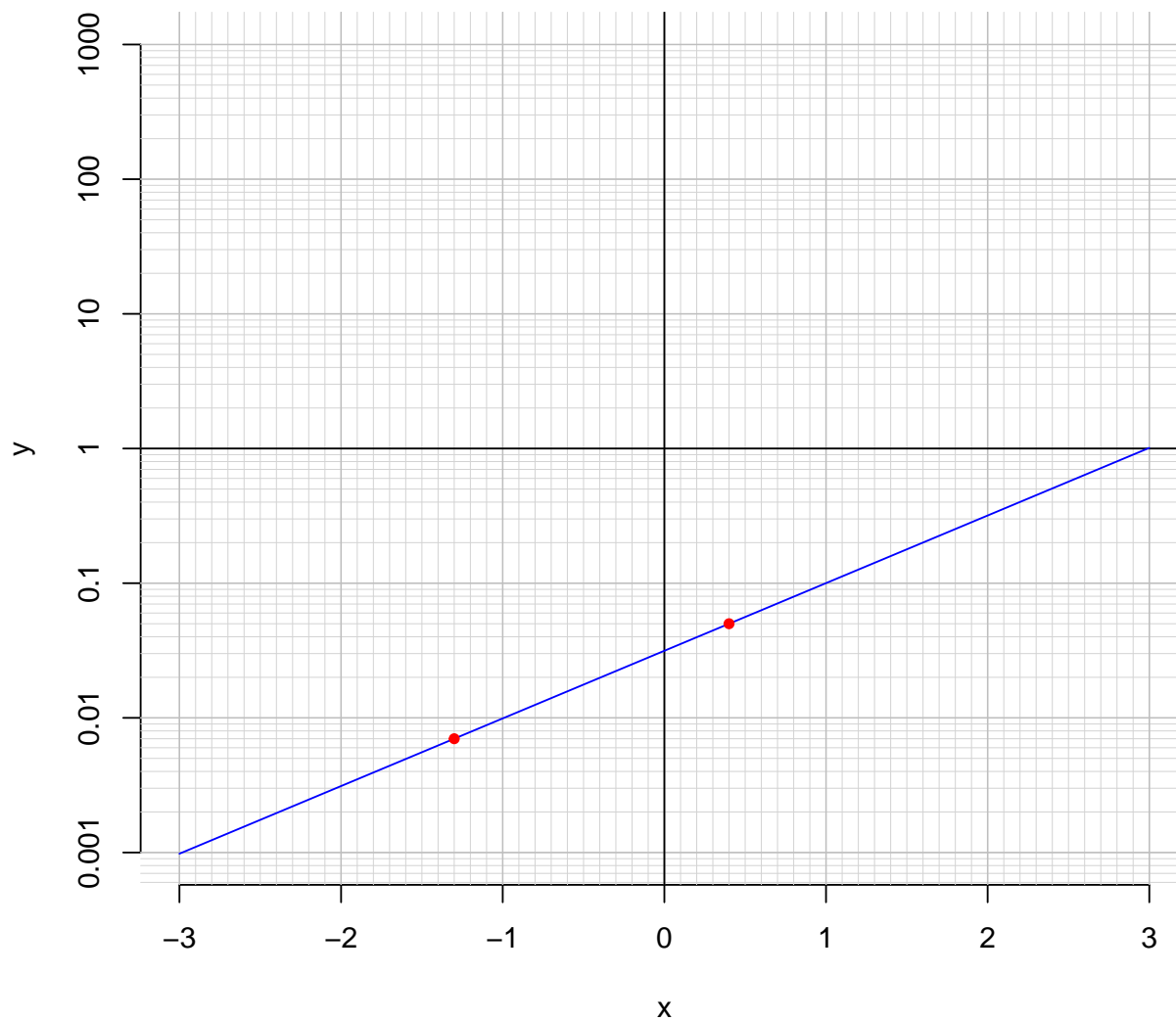
Divide both sides by $\frac{3}{7}$.

$$\frac{7}{3} \cdot \log_{10} \left(\frac{17 \cdot 4}{5} \right) = t$$

Switch sides.

$$t = \frac{7}{3} \cdot \log_{10} \left(\frac{17 \cdot 4}{5} \right)$$

3. (10 pts) An exponential function $f(x) = 0.0315 \cdot e^{1.16x}$ is graphed below on a semi-log plot.



- a. Using the plot above, evaluate $f(-1.3)$.

$$f(-1.3) = 0.007$$

- b. The inverse function is logarithmic.

$$f^{-1}(x) = \frac{1}{1.16} \cdot \ln\left(\frac{x}{0.0315}\right)$$

Using the plot above, evaluate $f^{-1}(0.05)$.

$$f^{-1}(0.05) = 0.4$$